

**WHAT IS CLAIMED IS:**

1. An apparatus for transmitting packetized data received from a digital signal processor (DSP) sub-system and host processor in an asynchronous transfer mode (ATM) system, said apparatus comprising:

5 a first direct memory access unit having an input for receiving a voice packet fetched from said DSP sub-system, wherein said voice packet includes a physical phone line identifier; and

10 a second direct memory access unit having an input for receiving a signaling and management packet from said host processor, wherein said signaling and management packet includes a transmit channel identifier.

2. The apparatus of Claim 1, wherein said ATM system is an AAL2 module.

3. The apparatus of Claim 1 further comprising:

15 a router identifier table having a memory for storing channel pointers, wherein said physical phone line identifier indexes to a particular channel pointer which identifies a transmit channel in a channel state table; and wherein

said channel state table having a memory for storing channel information for a plurality of transmit channels, said channel information including a pointer to a transmit buffer, wherein said voice and signaling and management packets identified to a particular transmit buffer are forwarded to said particular transmit  
5 buffer for further processing and transmission to a destination port.

4. The apparatus of Claim 3, wherein a plurality of entries in said router identifier table identifies a particular transmit channel for multiplexing a plurality of physical phone lines onto one ATM channel.

5. The apparatus of Claim 3 further including segmentation logic for forwarding voice and signaling and management packet payloads to said particular transmit buffer.

6. The apparatus of Claim 1, wherein said first direct memory access unit further operably configured to fetch said voice packet from a voice buffer associated with each digital signal processor in said DSP sub-system.

7. The apparatus of Claim 3 implemented in hardware.

8. A system for interleaving voice packets and signaling and management packets on an asynchronous transfer mode (ATM) connection, said system comprising:

5 a digital signal processor (DSP) system having an input for receiving a voice communication and operably configured to packetize said voice communication and append a corresponding physical phone line identifier;

a host processor operably configured to enable ATM adaptation layer signaling and management and transmit a corresponding signaling and management packet including a transmit channel identifier; and

10 an ATM transmitter comprising:

a first direct memory access unit having an input for receiving a voice packet fetched from said DSP sub-system; and

a second direct memory access unit having an input for receiving a signaling and management packet fetched from said host processor.

15 9. The system of Claim 8, wherein said ATM transmitter is implemented in an AAL2 module.

10. The system of Claim 8 further comprising:

a router identifier table having a memory for storing channel pointers,  
wherein said logical channel identifier indexes to a particular channel pointer  
entry which identifies a transmit channel in a channel state table; and wherein

said channel state table having a memory for storing channel information  
for a plurality of transmit channels, said channel information including a pointer  
to a transmit buffer, wherein said voice and signaling and management packets  
identified to a particular transmit buffer for further processing and transmission to  
a destination port.

11. The system of Claim 10, wherein a plurality of entries in said router  
identifier table identifies a particular transmit channel for multiplexing a plurality  
of physical phone lines onto one ATM channel.

12. The system of Claim 10, wherein said first direct memory access unit  
further operably configured to fetch said voice packet from a voice buffer  
associated with each digital signal processor in said DSP sub-system.

13. The system of Claim 10, further including segmentation logic for forwarding voice and signaling and management packet payloads to said particular transmit buffer.

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14. The system of Claim 10 integrated on a silicon chip.

15. The system of Claim 10, wherein said ATM transmitter is implemented in hardware.

16. A method for transmitting packetized data received from a digital signal processor (DSP) sub-system and a host processor in an asynchronous transfer mode (ATM) system, said method comprising:

5           fetching a voice packet from said DSP sub-system, said voice packet including a physical phone line identifier corresponding to an originating voice channel supported by said DSP sub-system;

              forwarding said voice packet to a transmit buffer associated with a identified transmit channel;

10           fetching a signaling and management packet from said host processor, said signaling and management packet including a transmit channel identifier; and

              forwarding said signaling and management packet to a transmit buffer associated with an identified transmit channel.

17. The method of Claim 16, further comprising:

indexing said physical phone line identifier to a set of channel pointers  
stored in a router identifier table, wherein each of said channel pointers identifies  
one of a plurality of transmit channel entries in a channel state table; and

indexing said signaling and management packet transmit channel identifier  
to a transmit channel entry in said channel state table.

18. The method of Claim 17 wherein said forwarding voice and signal and  
management packets comprises forwarding only payloads of each packet.

19. The method of Claim 17 further including transmitting data forwarded to  
said transmit buffer to a destination port associated with said ATM system.

20. The method of Claim 17 implemented in hardware.